

REMARKS

Claims 10, 17, and 20-26 remain pending. Independent claims 10 and 21 have been amended as suggested by the Examiner to indicate that the rate refers to change in capacity of the compressor. The amendment is supported by the specification at paragraphs [0019]-[0020] and also by the claims themselves (“variable capacity compressor”).

Applicants have also amended claims 10, 21, and 26 to clarify that the motor referred to in the claims is the *compressor* motor, not the vehicle motor. In addition, while Applicants believe it is inherent in fuel cell systems, Applicants have amended the independent claims to make it explicit that the compressor supplies oxidant to the fuel cells as long as the fuel cell system operates. Applicants believed this is an inherent feature of fuel cell systems, since without the oxidant there is no reaction, thus no electricity generated, thus the fuel cell system ceases operation. However, in light of the Examiner’s comment that the claims “do not include limitations to the constant running of either the fuel cell system or the compressor” on page 7 of the Office Action, and in an abundance of caution that the Examiner should understand that the compressor supplies the oxidant the fuel cell needs to operate, Applicants have introduced this amendment.

Applicants appreciate the Examiner’s careful consideration of the claims and respond to the rejections as follows.

Rejections Under 35 U.S.C. § 112, Second Paragraph

Claims 10, 17, and 20-26 stand rejected as allegedly indefinite in the phrase “threshold rate below 40%/s.” The Office Action states that it is unclear because the claims do not state that

the rate refers to change in capacity of the compressor. Applicants have amended independent claims 10 and 21 to make this explicit.

Applicants believe that this amendment overcomes the rejection and respectfully request reconsideration of the claims as amended.

Rejection Under 35 U.S.C. § 103(a) over Lahiff in View of Arnold et al.

10, 17, and 20-26 stand rejected as unpatentable over Lahiff in view of Arnold et al. Applicants respectfully traverse the rejection as it applies to the amended claims 1 and 10 and request reconsideration of the claims.

Applicants have carefully considered the objections raised by the Examiner to their argument in the last response filed and, having amended the claims, believe that the claims overcome the issues raised.

First, the claims require that it is the compressor motor that is regeneratively braked. The Lahiff patent teaches that its vehicle motor is regeneratively braked. Paragraph [0033]. As taught by the Lahiff patent (and known in the art), regenerative braking of the vehicle's motor converts the kinetic energy of the vehicle into electric energy. Paragraph [0004].

In contrast, Applicants claims require regenerative braking of the compressor motor. This action is entirely independent of the vehicle's kinetic energy. Applicants further note that it is motor 34 of the Lahiff drive train that is regeneratively braked, not compressor motor 78. Figs. 3 & 6; paragraphs [0031] (distinguishing fuel cell power system 10 and motor system 28), [0033] (motor 34 drives wheels of vehicle), [0037] (regenerative braking of motor 34)[0042] (same). Thus, the Lahiff patent fails to disclose any regenerative braking of a compressor motor.

The Lahiff teaches that during regenerative braking, the compressor of the fuel cell system is being operated to dissipate electrical energy, not to generate it. Abstract. Thus, the Lahiff patent teaches away from the modifications that would be required to arrive at Applicants' invention.

The rejection relies on the Arnold patent to teach a variable speed compressor. The Arnold patent describes an internal combustion engine turbocharger system that uses an exhaust-driven turbine to generate electricity to drive a compressor to boost power. Col. 2, ll. 42-67. Arnold describes using its compressor intermittently to provide bursts of power, e.g. for ten seconds, in the paragraph bridging columns 5 and 6. In this way, the Arnold compressor is either operating or it is not. The Arnold reference does not teach a compressor that is used in a normal mode with intermittent rapid transient upward and downward modes, but instead teaches a compressor used intermittently. Top of column 6. This is in contrast to operation of a compressor in a fuel cell system, which must supply the oxidant that the fuel cells require to work. Therefore, there is no reason to modify the Lahiff fuel cell system with the Arnold compressor system because (1) the Arnold intermittent bursts of compressed air will wreak havoc with operation of the Lahiff fuel cell system and (2) the Arnold compressor, which derives its energy from exhaust from an internal combustion engine, are not going to work where no internal combustion engine is present.

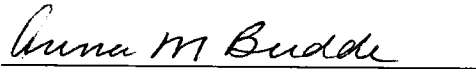
The Examiner refers to "use of stored power . . . and then switching back to the on-line power . . . for normal operation" in column 6, lines 7 to 20 of Arnold. Office Action, pages 6-7. This passage still teaches that the compressor is operated only intermittently, and that, of its two possible power sources, one is the turbine.

Because of these deficiencies of the combined references cited in rejection,
reconsideration and allowance of the claims are thus respectfully requested.

Conclusion

It is believed that all of the stated grounds of rejection have been properly traversed, accommodated, or rendered moot. Applicant therefore respectfully requests that the Examiner reconsider and withdraw all presently outstanding rejections. It is believed that a full and complete response has been made to the outstanding Office Action, and as such, the present application is in condition for allowance. Thus, prompt and favorable consideration of this amendment is respectfully requested. If the Examiner believes that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at (248) 641-1600.

Respectfully submitted,

A handwritten signature in cursive script, reading "Anna M Budde", is written over a horizontal line.

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January 29, 2009
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